

IN THE CLAIMS

Please amend the claims as follows:

1. (currently amended) A martensitic stainless steel ~~with a plastically-processed history~~ consisting of C: 0.02 – 0.10%, Si: 0.05 – 1.0%, Mn: 0.05 – 0.95%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 1.0 – 4.5%, Al: not more than 0.05%, N: not more than 0.1%, Cu: 0.05 – 5%, and Mo: 0.05 – 5% in mass %, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (a),

$$0.2\% \leq \text{Mo} + \text{Cu}/4 \leq 5\% \quad \dots (a)$$

and wherein the hardness is 30 – 45 in HRC and the amount of carbides in grain boundaries of prior austenite is not more than 0.13 volume %, a yield strength of the steel after cooling by quenching or air cooling in a final treatment after final heating at a temperature of the Ac_3 point or more is not less than 815 MPa, wherein the final heating includes hot working in case that a reheating to a temperature of Ac_3 point or more and subsequent cooling is not conducted.

2. (currently amended) A martensitic stainless steel ~~with a plastically-processed history~~ consisting of C: 0.02 – 0.10%, Si: 0.05 – 1.0%, Mn: 0.05 – 0.95%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 1.0 – 4.5%, Al: not more than 0.05%, N: not more than 0.1%, Cu: 0.05 – 5%, and Mo: 0.05 – 5% in mass %, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (b),

$$0.55\% \leq \text{Mo} + \text{Cu}/4 \leq 5\% \quad \dots (b)$$

and wherein the hardness is 30 – 45 in HRC and the amount of carbides in grain boundaries of prior austenite is not more than 0.13 volume %, and a yield strength of the steel after cooling by quenching or air cooling in a final treatment after final heating at a temperature of the Ac_3 point or more is not less than 815 MPa, wherein the final heating includes hot working in case that a reheating to a temperature of Ac_3 point or more and subsequent cooling is not conducted.

3. (currently amended) A martensitic stainless steel ~~with a plastically-processed history~~ consisting of C: 0.02 – 0.10%, Si: 0.05 – 1.0%, Mn: 0.05 – 0.95%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 1.0 – 4.5%, Al: not more than 0.05% , N: not more than 0.1%, Cu: 0.05 – 5%, Mo: 0.05 – 5%, and at least one of the elements of Ti: 0.005 – 0.5%, V: 0.005 – 0.5% and Nb: 0.005 – 0.5% in mass %, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (a),

$$0.2\% \leq \text{Mo} + \text{Cu}/4 \leq 5\% \quad \dots (a)$$

and wherein the hardness is 30 – 45 in HRC the amount of carbides in grain boundaries of prior austenite is not more than 0.13 volume %, and a yield strength of the steel after cooling by quenching or air cooling in a final treatment after final heating at a temperature of the A_{c3} point or more is not less than 815 MPa, wherein the final heating includes hot working in case that a reheating to a temperature of A_{c3} point or more and subsequent cooling is not conducted.

4. (currently amended) A martensitic stainless steel ~~with a plastically-processed history~~ consisting of C: 0.02 – 0.10%, Si: 0.05 – 1.0%, Mn: 0.05 – 0.95%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 1.0 – 4.5%, Al: not more than 0.05%, N: not more than 0.1%, Cu: 0.05 – 5%, Mo: 0.05 – 5%, and at least one of the elements of Ti: 0.005 – 0.5%, V: 0.005 – 0.5% and Nb: 0.005 – 0.5% in mass %, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (b),

$$0.55\% \leq \text{Mo} + \text{Cu}/4 \leq 5\% \quad (b)$$

and wherein the hardness is 30 – 45 in HRC and the amount of carbides in grain boundaries of prior austenite is not more than 0.13 volume %, and a yield strength of the steel after cooling by quenching or air cooling in a final treatment after final heating at a temperature of the A_{c3} point or more is not less than 815 MPa, wherein the final heating includes hot working in case that a reheating to a temperature of A_{c3} point or more and subsequent cooling is not conducted.

5. (currently amended) A martensitic stainless steel ~~with a plastically-processed history~~ consisting of C: 0.02 – 0.10%, Si: 0.05 – 1.0%, Mn: 0.05 – 0.95%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 1.0 – 4.5%, Al: not more than 0.05%, N: not more than 0.1%, Cu: 0.05 – 5%, Mo: 0.05 – 5%, and one or more elements of B: 0.0002 – 0.005%, Ca: 0.0003 – 0.005%, Mg: 0.0003 – 0.005% and rare earth elements: 0.0003 – 0.005% in mass %, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (a),

$$0.2\% \leq \text{Mo} + \text{Cu}/4 \leq 5\% \quad \dots (a)$$

and wherein the hardness is 30 – 45 in HRC, the amount of carbides in grain boundaries of prior austenite is not more than 0.13 volume %, and a yield strength of the steel after cooling by quenching or air cooling in a final treatment after final heating at a temperature of the A_{c3} point or more is not less than 815 MPa, wherein the final heating includes hot working in case that a reheating to a temperature of A_{c3} point or more and subsequent cooling is not conducted.

6. (currently amended) A martensitic stainless steel ~~with a plastically-processed history~~ consisting of C: 0.02 – 0.10%, Si: 0.05 – 1.0%, Mn: 0.05 – 0.95%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 1.0 – 4.5%, Al: not more than 0.05%, N: not more than 0.1%, Cu: 0.05 – 5%, Mo: 0.05 – 5%, and one or more elements of B: 0.0002 – 0.005%, Ca: 0.0003 – 0.005%, Mg: 0.0003 – 0.005% and rare earth elements: 0.0003 – 0.005% in mass %, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (b),

$$0.55\% \leq \text{Mo} + \text{Cu}/4 \leq 5\% \quad \dots (b)$$

and wherein the hardness is 30 – 45 in HRC, the amount of carbides in grain boundaries of prior austenite is not more than 0.13 volume %, and a yield strength of the steel after cooling by quenching or air cooling in a final treatment after final heating at a temperature of the A_{c3} point or more is not less than 815 MPa, wherein the final heating includes hot working in case that a reheating to a temperature of A_{c3} point or more and subsequent cooling is not conducted.

7. (currently amended) A martensitic stainless steel ~~with a plastically processed history~~ consisting of C: 0.02 – 0.10%, Si: 0.05 – 1.0%, Mn: 0.05 – 0.95%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 1.0 – 4.5%, Al: not more than 0.05% , N: not more than 0.1%, Cu: 0.05 – 5%, Mo: 0.05 – 5%, at least one of the elements of Ti: 0.005 – 0.5%, V: 0.005 – 0.5% and Nb: 0.005 – 0.5%, and one or more elements of B: 0.0002 – 0.005%, Ca: 0.0003 – 0.005%, Mg: 0.0003 – 0.005% and rare earth elements: 0.0003 – 0.005% in mass %, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (a),

$$0.2\% \leq \text{Mo} + \text{Cu}/4 \leq 5\% \quad \dots (a)$$

and wherein the hardness is 30 – 45 in HRC, the amount of carbides in grain boundaries of prior austenite is not more than 0.13 volume %, and a yield strength of the steel after cooling by quenching or air cooling in a final treatment after final heating at a temperature of the A_{c3} point or more is not less than 815 MPa, wherein the final heating includes hot working in case that a reheating to a temperature of A_{c3} point or more and subsequent cooling is not conducted.

8. (currently amended) A martensitic stainless steel ~~with a plastically processed history~~ consisting of C: 0.02 – 0.10%, Si: 0.05 – 1.0%, Mn: 0.05 – 0.95%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 1.0 – 4.5%, Al: not more than 0.05%, N: not more than 0.1%, Cu: 0.05 – 5%, Mo: 0.05 – 5%, at least one of the elements of Ti: 0.005 – 0.5%, V: 0.005 – 0.5% and Nb: 0.005 – 0.5%, and one or more elements of B: 0.0002 – 0.005%, Ca: 0.0003 – 0.005%, Mg: 0.0003 – 0.005% and rare earth elements: 0.0003 – 0.005% in mass %, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (b),

$$0.55\% \leq \text{Mo} + \text{Cu}/4 \leq 5\% \quad (b)$$

and wherein the hardness is 30 – 45 in HRC, the amount of carbides in grain boundaries of prior austenite is not more than 0.13 volume %, and a yield strength of the steel after cooling by quenching or air cooling in a final treatment after final heating at a temperature of the A_{c3} point or more is not less than 815 MPa, wherein the final

heating includes hot working in case that a reheating to a temperature of Ac_3 point or more and subsequent cooling is not conducted.

9-12. canceled.

13. (previously presented) A martensitic stainless steel ~~with a plastically-processed history~~ consisting of C: 0.02 – 0.10%, Si: 0.05 – 1.0%, Mn: 0.05 – 0.95%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 1.0 – 4.5%, Al: not more than 0.05%, N: not more than 0.1%, Cu: 0.05 – 5%, and Mo: 0.05 – 5% in mass %, the residual being Fe and impurities, wherein the contents of Cu satisfy the following formula (a),

$$0.2\% \leq Mo + Cu/4 \leq 5\% \quad \dots (a)$$

and wherein the hardness is 30 – 45 in HRC, the amount of carbides in grain boundaries of prior austenite is not more than 0.13 volume %, the martensitic stainless steel having a structure resulting from one of quenching, air cooling, quenching followed by a 400 °C or lower tempering treatment, or air cooling followed by a 400 °C or lower tempering treatment, and a yield strength of the steel after cooling by quenching or air cooling in a final treatment after final heating at a temperature of the Ac_3 point or more is not less than 815 MPa, wherein the final heating includes hot working in case that a reheating to a temperature of Ac_3 point or more and subsequent cooling is not conducted, and the amounts of Cu and Mo effective to form a sulfide layer on a formed chromium oxide layer, the sulfide layer formed as a result of the martensitic stainless steel being subjected to a sulfur-containing environment.

14. (currently amended) A martensitic stainless steel ~~with a plastically-processed history~~ consisting of C: 0.02 – 0.10%, Si: 0.05 – 1.0%, Mn: 0.05 – 0.95%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 1.0 – 4.5%, Al: not more than 0.05%, and N: not more than 0.1%, Cu: 0.05 – 5%, and Mo: 0.05 – 5% in mass %, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (b),

$$0.55\% \leq \text{Mo} + \text{Cu}/4 \leq 5\% \quad \dots (b)$$

and wherein the hardness is 30 – 45 in HRC, the amount of carbides in grain boundaries of prior austenite is not more than 0.13 volume %, the martensitic stainless steel having a structure resulting from one of quenching, air cooling, quenching followed by a 400 °C or lower tempering treatment, or air cooling followed by a 400 °C or lower tempering treatment, and a yield strength of the steel after cooling by quenching or air cooling in a final treatment after final heating at a temperature of the A_{c3} point or more is not less than 815 MPa, wherein the final heating includes hot working in case that a reheating to a temperature of A_{c3} point or more and subsequent cooling is not conducted, and the amounts of Cu and Mo effective to form a sulfide layer on a formed chromium oxide layer, the sulfide layer formed as a result of the martensitic stainless steel being subjected to a sulfur-containing environment.

15. (currently amended) A martensitic stainless steel ~~with a plastically-processed history~~ consisting of C: 0.02 – 0.10%, Si: 0.05 – 1.0%, Mn: 0.05 – 0.95%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 1.0 – 4.5%, Al: not more than 0.05% , N: not more than 0.1%, Cu: 0.05 – 5%, and Mo: 0.05 – 5%, and at least one of the elements of Ti: 0.005 – 0.5%, V: 0.005 – 0.5% and Nb: 0.005 – 0.5% in mass %, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (a),

$$0.2\% \leq \text{Mo} + \text{Cu}/4 \leq 5\% \quad \dots (a)$$

and wherein the hardness is 30 – 45 in HRC, the amount of carbides in grain boundaries of prior austenite is not more than 0.13 volume %, the martensitic stainless steel having a structure resulting from one of quenching, air cooling, quenching followed by a 400 °C or lower tempering treatment, or air cooling followed by a 400 °C or lower tempering treatment, and a yield strength of the steel after cooling by quenching or air cooling in a final treatment after final heating at a temperature of the A_{c3} point or more is not less than 815 MPa, wherein the final heating includes hot working in case that a reheating to a temperature of A_{c3} point or more and subsequent cooling is not conducted, and the amounts of Cu and Mo effective to form a sulfide

layer on a formed chromium oxide layer, the sulfide layer formed as a result of the martensitic stainless steel being subjected to a sulfur-containing environment.

16. (currently amended) A martensitic stainless steel ~~with a plastically-processed history~~ consisting of C: 0.02 – 0.10%, Si: 0.05 – 1.0%, Mn: 0.05 – 0.95%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 1.0 – 4.5%, Al: not more than 0.05%, N: not more than 0.1%, Cu: 0.05 – 5%, Mo: 0.05 – 5%, and at least one of the elements of Ti: 0.005 – 0.5%, V: 0.005 – 0.5% and Nb: 0.005 – 0.5% in mass %, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (b),

$$0.55\% \leq \text{Mo} + \text{Cu}/4 \leq 5\% \quad (b)$$

and wherein the hardness is 30 – 45 in HRC, the amount of carbides in grain boundaries of prior austenite is not more than 0.13 volume %, the martensitic stainless steel having a structure resulting from one of quenching, air cooling, quenching followed by a 400 °C or lower tempering treatment, or air cooling followed by a 400 °C or lower tempering treatment, and a yield strength of the steel after cooling by quenching or air cooling in a final treatment after final heating at a temperature of the A_{c3} point or more is not less than 815 MPa, wherein the final heating includes hot working in case that a reheating to a temperature of A_{c3} point or more and subsequent cooling is not conducted, and the amounts of Cu and Mo effective to form a sulfide layer on a formed chromium oxide layer, the sulfide layer formed as a result of the martensitic stainless steel being subjected to a sulfur-containing environment.

17. (currently amended) A martensitic stainless steel ~~with a plastically-processed history~~ consisting of C: 0.02 – 0.10%, Si: 0.05 – 1.0%, Mn: 0.05 – 0.95%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 1.0 – 4.5%, Al: not more than 0.05%, N: not more than 0.1%, Cu: 0.05 – 5%, Mo: 0.05 – 5%, and one or more elements of B: 0.0002 – 0.005%, Ca: 0.0003 – 0.005%, Mg: 0.0003 – 0.005% and rare earth elements: 0.0003 – 0.005% in mass %, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (a),

$$0.2\% \leq \text{Mo} + \text{Cu}/4 \leq 5\% \quad \dots (a)$$

and wherein the hardness is 30 – 45 in HRC, the amount of carbides in grain boundaries of prior austenite is not more than 0.13 volume %, the martensitic stainless steel having a structure resulting from one of quenching, air cooling, quenching followed by a 400 °C or lower tempering treatment, or air cooling followed by a 400 °C or lower tempering treatment, and a yield strength of the steel after cooling by quenching or air cooling in a final treatment after final heating at a temperature of the A_{c3} point or more is not less than 815 MPa, wherein the final heating includes hot working in case that a reheating to a temperature of A_{c3} point or more and subsequent cooling is not conducted, and the amounts of Cu and Mo effective to form a sulfide layer on a formed chromium oxide layer, the sulfide layer formed as a result of the martensitic stainless steel being subjected to a sulfur-containing environment.

18. (currently amended) A martensitic stainless steel ~~with a plastically-processed history~~ consisting of C: 0.02 – 0.10%, Si: 0.05 – 1.0%, Mn: 0.05 – 0.95%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 1.0 – 4.5%, Al: not more than 0.05%, N: not more than 0.1%, Cu: 0.05 – 5%, Mo: 0.05 – 5%, and one or more elements of B: 0.0002 – 0.005%, Ca: 0.0003 – 0.005%, Mg: 0.0003 – 0.005% and rare earth elements: 0.0003 – 0.005% in mass %, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (b),

$$0.55\% \leq \text{Mo} + \text{Cu}/4 \leq 5\% \quad \dots (b)$$

and wherein the hardness is 30 – 45 in HRC, the amount of carbides in grain boundaries of prior austenite is not more than 0.13 volume %, the martensitic stainless steel having a structure resulting from one of quenching, air cooling, quenching followed by a 400 °C or lower tempering treatment, or air cooling followed by a 400 °C or lower tempering treatment, and a yield strength of the steel after cooling by quenching or air cooling in a final treatment after final heating at a temperature of the A_{c3} point or more is not less than 815 MPa, wherein the final heating includes hot working in case that a reheating to a temperature of A_{c3} point or more and subsequent cooling is not conducted, and the amounts of Cu and Mo effective to form a sulfide

layer on a formed chromium oxide layer, the sulfide layer formed as a result of the martensitic stainless steel being subjected to a sulfur-containing environment.

19. (currently amended) A martensitic stainless steel ~~with a plastically-processed history~~ consisting of C: 0.02 – 0.10%, Si: 0.05 – 1.0%, Mn: 0.05 – 0.95%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 1.0 – 4.5%, Al: not more than 0.05% , N: not more than 0.1%, Cu: 0.05 – 5%, Mo: 0.05 – 5%, at least one of the elements of Ti: 0.005 – 0.5%, V: 0.005 – 0.5% and Nb: 0.005 – 0.5%, and one or more elements of B: 0.0002 – 0.005%, Ca: 0.0003 – 0.005%, Mg: 0.0003 – 0.005% and rare earth elements: 0.0003 – 0.005% in mass %, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (a),

$$0.2\% \leq \text{Mo} + \text{Cu}/4 \leq 5\% \quad \dots (a)$$

and wherein the hardness is 30 – 45 in HRC, the amount of carbides in grain boundaries of prior austenite is not more than 0.13 volume %, the martensitic stainless steel having a structure resulting from one of quenching, air cooling, quenching followed by a 400 °C or lower tempering treatment, or air cooling followed by a 400 °C or lower tempering treatment, and a yield strength of the steel after cooling by quenching or air cooling in a final treatment after final heating at a temperature of the A_{c3} point or more is not less than 815 MPa, wherein the final heating includes hot working in case that a reheating to a temperature of A_{c3} point or more and subsequent cooling is not conducted, and the amounts of Cu and Mo effective to form a sulfide layer on a formed chromium oxide layer, the sulfide layer formed as a result of the martensitic stainless steel being subjected to a sulfur-containing environment.

20. (currently amended) A martensitic stainless steel ~~with a plastically-processed history~~ consisting of C: 0.02 – 0.10%, Si: 0.05 – 1.0%, Mn: 0.05 – 0.95%, P: not more than 0.03%, S: not more than 0.01%, Cr: 9 – 15%, Ni: 1.0 – 4.5%, Al: not more than 0.05%, N: not more than 0.1%, Cu: 0.05 – 5%, optionally Mo: 0.05 – 5%, at least one of the elements of Ti: 0.005 – 0.5%, V: 0.005 – 0.5% and Nb: 0.005 – 0.5%, and one or more elements of B: 0.0002 – 0.005%, Ca: 0.0003 – 0.005%, Mg:

0.0003 – 0.005% and rare earth elements: 0.0003 – 0.005% in mass %, the residual being Fe and impurities, wherein the contents of Cu and Mo satisfy the following formula (b),

$$0.55\% \leq \text{Mo} + \text{Cu}/4 \leq 5\% \quad (b)$$

and wherein the hardness is 30 – 45 in HRC, the amount of carbides in grain boundaries of prior austenite is not more than 0.13 volume %, the martensitic stainless steel having a structure resulting from one of quenching, air cooling, quenching followed by a 400 °C or lower tempering treatment, or air cooling followed by a 400 °C or lower tempering treatment, and a yield strength of the steel after cooling by quenching or air cooling in a final treatment after final heating at a temperature of the A_{c3} point or more is not less than 815 MPa, wherein the final heating includes hot working in case that a reheating to a temperature of A_{c3} point or more and subsequent cooling is not conducted, and the amounts of Cu and Mo effective to form a sulfide layer on a formed chromium oxide layer, the sulfide layer formed as a result of the martensitic stainless steel being subjected to a sulfur-containing environment.